

REMARKS

Reconsideration is requested.

The Examiner has rejected the previously filed Inventors' Declaration as being defective. New Declarations for each inventor are being submitted herewith which correctly reference this pending application, and the Amendment dated June 13, 2002 in order to overcome this rejection. Acceptance of the Inventors' Declarations is respectfully requested.

Claim 1, as amended, includes limitations from prior claim 2 and claim 8. Claim 2 was rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,974,396 to Anderson et al. in view of U.S. Patent No. 5,956,693 to Geerlings, and further in view of U.S. Patent 6,128,624 to Papierniak.

Claim 1, as amended, recites a customer profiling apparatus for conducting customer behavior pattern analysis on telephone call records including telephone call data, comprising processing circuitry operative to process customer telephone call records; a data warehouse coupled with the processing circuitry and configured to store the processed customer telephone call records; an OnLine Analytical Processing (OLAP) based scalable profiling engine communicating with the data warehouse and operative to build and update customer behavior profiles by mining the customer telephone call records that flow into the data warehouse; and at least one computer program, performed by the profiling engine, and operative to define behavior profiles, using data from the telephone call records, as data cubes and derive similarity measures on patterns extracted from the behavior profiles.

The Anderson et al. reference fails to teach or suggest conducting customer telephone behavior pattern analysis on telephone call records. Though Anderson et al. may store telephone records, their focus is on relationships between consumers and products.

Further, the Anderson et al. reference fails to teach or suggest deriving similarity measures on patterns extracted from the behavior profiles.

Still further, the Anderson et al. reference also fails to teach or suggest using an OnLine Analytical Processing based scalable profiling engine.

It would not be obvious to combine Geerlings with Anderson et al. because there is no teaching in the references which would suggest their combination.

It would not be obvious to substitute portions of the structure of Geerlings for portions of the structure of Anderson et al. because there is no teaching in the references themselves of how the components should be combined or of which components of Geerlings should be selected and combined with which components of Anderson et al. There are no teachings in the references themselves which teach that there would be any advantage resulting from selecting portions of the structure of Geerlings and integrating that structure somehow into the structure of Anderson et al. in the manner suggested by the Examiner. The mere fact that the structures of the references could possibly be somehow modified to result in the claimed structure does not render the claimed structure obvious unless there is some suggestion of the desirability of the modification.

Evidence of a suggestion to combine may flow from the prior art references themselves, from the knowledge of one skilled in the art, or from the nature of the problem to be solved. However, this range of sources does not diminish the requirement for actual evidence.

The primary teaching or objective of Anderson et al. is to group consumers into clusters based on common consumer demographics and other characteristics. The primary teaching of Geerlings is a system for automating communications from merchants to consumers. If Geerlings was combined with Anderson et al., the combination would produce a system in which consumers are grouped into clusters and in which merchants communicate to clusters, as opposed to the system of claim 1.

Even if the Anderson et al. and Geerlings references could be combined, it would not be obvious to take the result of a combination of Anderson et al. and Geerlings and further modify that device with Papierniak et al. because there is no teaching or suggestion as to which components should be selected from Geerlings, which components should be selected from Papierniak, and which components should be selected from the Anderson et al. reference.

There is no teaching in the references themselves of how the components should be combined or of which components of Papierniak should be selected and combined with which components of Geerlings and which components of Anderson et al. There are no teachings in the references themselves which teach that there would be any advantage resulting from selecting portions of the structure of Papierniak and integrating that structure somehow into the structure of Geerlings and Anderson et al. in the manner suggested by the Examiner.

Therefore, claim 1 is allowable.

As claims 3-7 and 9-10 depend on claim 1, they too are allowable.

Claim 11, as amended, recites a profiling apparatus, comprising a data warehouse for storing customer records including telephone call data; a profiling engine configured to communicate with the data warehouse and operative to generate customer telephone calling behavior profiles from the customer records within the data warehouse, the profiling engine being configured to define customer telephone calling behavior profiles using probability distributions, and to compute the customer telephone calling behavior profiles using OLAP operations on multi-dimensional and multi-level data cubes, one multi-level data cube being a profile cube, another multi-level data cube being a profile-snapshot cube, and yet another data cube being a profile cube formed by merging together the profile cube and the profile-snapshot cube; and a computer application program implemented on the profiling engine and operative to represent behavior profiles as patterns, using the telephone call data, and derive similarity measures of the patterns usable to profile customer behavior and detect fraud.

The Anderson et al. reference fails to teach or suggest generating customer telephone calling behavior profiles.

Further, the Anderson et al. reference fails to teach or suggest merging together the profile cube and the profile-snapshot cube.

Still further, the Anderson et al. reference fails to teach or suggest computing the customer telephone calling behavior profiles using OLAP operations on multi-dimensional and multi-level data cubes.

It would not be obvious to combine the Anderson et al. reference with the Geerlings reference because there is no teaching in the references themselves of how the components should be combined or of which components of Geerlings should be selected and combined with which components of Anderson et al. There are no teachings in the references themselves which teach that there would be any advantage resulting from selecting portions of the structure of Geerlings and integrating that structure somehow into the structure of Anderson et al. in the manner suggested by the Examiner. The mere fact that the structures of the references could possibly be somehow modified to result in the claimed structure does not render the claimed structure obvious unless there is some suggestion of the desirability of the modification.

Even if the Anderson et al. reference could be combined with the

Geerlings reference, the combination would still fail to teach or suggest merging together the profile cube and the profile-snapshot cube.

The Examiner is taking the position that "Official notice is taken that it is old and well known in the customer profiling art to merge together the profile cube and the profile-snapshot cube....It would therefore make sense to merge together the profile cube and the profile-snapshot cube since they contain the same information."

Applicant respectfully requests from the Examiner an affidavit in accordance with MPEP § 707(d)(2):

When a rejection in an application is based on facts within the personal knowledge of an employee of the Office, the data shall be as specific as possible, and the reference must be supported, when called for by the applicant, by the affidavit of such employee, and such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons.

In addition, evidence of motivation to combine the examiner's personal knowledge with Geerlings and Anderson et al. is requested. It is respectfully submitted that the combination of references is improper. There is no teaching or suggestion as to which structure to select out of which of the Geerlings, Anderson et al., and personal knowledge references and how that structure should be combined.

Therefore, claim 11 is allowable.

As claim 16 depends on claim 11, it too is allowable.

Claim 17 stands rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,974,396 to Anderson et al. in view of U.S. Patent No. 5,956,693 to Geerlings, and further in view of U.S. Patent 6,128,624 to Papierniak et al.

Claim 17 recites a method for comparing customer behavior patterns, comprising providing call data in the form of call data records to a data warehouse; loading the call data records into an OLAP server; generating a profile-snapshot cube accommodating multiple customers; in combination with generating the profile-snapshot cube, generating a profile cube for the same set of customers from the data warehouse; updating the profile cube by merging the profile cube with the profile-snapshot cube; and storing the updated profile cube in the data warehouse.

It would not be obvious to combine Geerlings with Anderson et al. for reasons similar to those provided above. Additionally, it would not be obvious to combine Papierniak et al. with Anderson et al. as modified by Geerlings for reasons similar to those provided above. Even if Anderson et al. could be properly combined with Geerlings, and that combination could be properly combined with Papierniak et

al., the combination would still fail to teach or suggest updating the profile cube by merging the profile cube with the profile-snapshot cube; and storing the updated profile cube in the data warehouse.

Additionally, insufficient evidence has been provided as to why one of ordinary skill in the art would have been motivated to select the references and combine them. Attention is directed to the Federal Circuit decision of *In re Sang-Su Lee*, 61 USPQ2d 1430 (Fed. Cir. 2002). Mr. Lee's patent application was directed to a method of automatically displaying the functions of a video display device and demonstrating how to select and adjust the functions in order to facilitate response by the user. The display and demonstration were achieved using computer-managed electronics, including pulse-width modulation and auto-fine-tuning pulses, in accordance with procedures described in Lee's specification. Claim 10 was representative:

10. A method for automatically displaying functions of a video display device, comprising:
 - determining if a demonstration mode is selected;
 - if said demonstration mode is selected, automatically entering a picture adjustment mode having a picture menu screen displaying a list of a plurality of picture functions; and
 - automatically demonstrating selection and adjustment of individual ones of said plurality of picture functions.

The examiner rejected the claims on the ground of obviousness, citing the combination of two references: United States Patent No. 4,626,892 to Nortrup, and the Thunderchopper Helicopter Operations Handbook for a video game. The Nortrup reference described a television set having a menu display by which the user can adjust various picture and audio functions; however, the Nortrup display did not include a demonstration of how to adjust the functions. The Thunderchopper Handbook described the Thunderchopper game's video display as having a "demonstration mode" showing how to play the game; however, the Thunderchopper Handbook made no mention of the adjustment of picture or audio functions. The examiner held that it would have been obvious to a person of ordinary skill to combine the teachings of these references to produce the Lee system.

Lee appealed to the Board, arguing that the Thunderchopper Handbook simply explained how to play the Thunderchopper game, and that the prior art provided no teaching or motivation or suggestion to combine this reference with Nortrup, or that such combination would produce the Lee invention. The Board held that it was not necessary to present a source of a teaching, suggestion, or motivation to combine these references or their teachings.

The Federal Circuit stated:

As applied to the determination of patentability *vel non* when the issue is obviousness, "it is fundamental that rejections under 35 U.S.C. §103 must be based on evidence comprehended by the language of that section." *In re Grasselli*, 713 F.2d 731, 739, 218 USPQ 769, 775 (Fed. Cir. 1983). The essential factual evidence on the issue of obviousness is set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966) and extensive ensuing precedent. The patent examination process centers on prior art and the analysis thereof. When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. See, e.g., *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001) ("the central question is whether there is reason to combine [the] references," a question of fact drawing on the Graham factors).

The factual inquiry whether to combine references must be thorough and searching. *Id.* It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. See, e.g., *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1124-25, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000) ("a showing of a suggestion, teaching, or motivation to combine the prior art references is an 'essential component of an obviousness holding'" (quoting *C.R. Bard, Inc., v. M3 Systems, Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998))); *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."); *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was

made by the applicant); *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) ("teachings of references can be combined only if there is some suggestion or incentive to do so.") (emphasis in original) (quoting *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)).

The need for specificity pervades this authority. See, e.g., *In re Kotzab*, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) ("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed"); *In re Rouffet*, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998) ("even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious."); *In re Fritch*, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) (the examiner can satisfy the burden of showing obviousness of the combination "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references").

With respect to Lee's application, neither the examiner nor the Board adequately supported the selection and combination of the Nortrup and Thunderchopper references to render obvious that which Lee described. The examiner's conclusory statements that "the demonstration mode is just a programmable feature which can be used in many different device[s] for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. This factual question of motivation is material to patentability, and could not be resolved on subjective belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher." *W.L. Gore v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983). Thus the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion.

Similarly, here, no evidence has been provided as to a teaching in the prior art that would motivate one of ordinary skill in the art to combine the references in the manner suggested.

Therefore, claim 17 is allowable.

As claims 18-20 depend on claim 17, they too are allowable.

In view of the foregoing, allowance of claims 1, 3-7, 9-11, and 16-20 is requested.

The Examiner is requested to phone the undersigned in the event that the next Office Action is one other than a Notice of Allowance. The undersigned is available for telephone consultation at any time.

Respectfully submitted,

Qiming Chen et al.

Dated:

November 11, 2002

By:



Deepak Malhotra
Reg. No. 33,560

**PATENT APPLICATION
DOCKET NO. 10991149-1**

**IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE**

INVENTOR(S): Qiming Chen et al.

SERIAL NO.: 09/464,311

GROUP ART UNIT: 3623

FILED: December 15, 1999

EXAMINER: Akiba K. Robinson Boyce

TITLE: CUSTOMER PROFILING APPARATUS FOR CONDUCTING
CUSTOMER BEHAVIOR PATTERN ANALYSIS, AND METHOD
FOR COMPARING CUSTOMER BEHAVIOR PATTERNS

**VERSION WITH MARKINGS TO SHOW CHANGES MADE
ACCOMPANYING RESPONSE TO SEPTEMBER 10, 2002 OFFICE ACTION**

In the Claims

The claims have been amended as follows. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

1 1. (Amended) A customer profiling apparatus for conducting
2 customer telephone behavior pattern analysis on telephone call records including
3 telephone call data, comprising:
4 processing circuitry operative to process customer telephone call
5 records;
6 a data warehouse coupled with the processing circuitry and configured
7 to store the processed customer telephone call records;
8 a an OnLine Analytical Processing (OLAP) based scalable profiling
9 engine communicating with the data warehouse and operative to build and update
10 customer behavior profiles by mining the customer telephone call records that flow
11 into the data warehouse; and
12 at least one computer program, performed by the profiling engine, and
13 operative to define behavior profiles, using data from the telephone call records, as

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Amendment B

14 data cubes and derive similarity measures on patterns extracted from the behavior
15 profiles.

Claim 8 has been cancelled.

1 9. (Amended) The apparatus of claim 1 & wherein the behavior
2 profiles are analyzed to detect caller fraud.

1 11. (Amended) A profiling apparatus, comprising:
2 a data warehouse for storing customer records including telephone call
3 data;

4 a profiling engine configured to communicate communicating with the
5 data warehouse and operative to generate customer telephone calling behavior
6 profiles from the customer records within the data warehouse, the profiling engine
7 being configured to define customer telephone calling behavior profiles using
8 probability distributions, and to compute the customer telephone calling behavior
9 profiles using OLAP operations on multi-dimensional and multi-level data cubes, one
10 multi-level data cube being a profile cube, another multi-level data cube being a
11 profile-snapshot cube, and yet another data cube being a profile cube formed by
12 merging together the profile cube and the profile-snapshot cube; and

13 a computer application program implemented on the profiling engine
14 and operative to represent behavior profiles as patterns, using the telephone call
15 data, and derive similarity measures of the patterns usable to profile customer
16 behavior and detect fraud.

Claims 12-15 have been cancelled.

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